REMARKS

Claims 1-20 are pending in this application. All pending claims stand rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 6,038,251 to Chen et al (hereinafter "Chen") in view of U.S. Patent No. 6,031,868 to Roberton et al (hereinafter "Roberton") and further in view of U.S. Patent No. 5,838,744 to Zheng (hereinafter "Zheng").

Claim Rejection – 35 USC § 103

Claims 1-20 stand rejected under 35 USC § 103 as allegedly obvious over Chen in view of Roberton and Zheng. Regarding independent claim 1, the Examiner states that Chen discloses all elements of the claim but for the "receiver having a signal transformer for generating a frequency domain signal from said received time domain signal" and "for operating on said frequency domain." The Examiner follows by stating that Roberton provides an ADSL transceiver in which time domain signals are converted to frequency domain signals. Finally, the Examiner asserts that Zheng provides a high speed modem and method having jitter-free timing recovery in which the claimed invention's "frequency domain equalizer generates...adjacent carriers." Applicant respectfully disagrees.

In contrast to the Examiner's assertion, Applicant submits that Chen fails to teach or suggest a transmitter transmitting at least one known symbol on at least two non-adjacent carriers and transmitting data symbols on carriers between said at least two non-adjacent carriers as claimed. The passages in Chen cited by the Examiner refer to a standard handshake protocol between two modems (column 27, lines 32-50) and a startup procedure for MDSL modems (column 28, lines 51-59). Specifically, the standard handshake sequence for rate negotiation outlined in column 27, lines 32-50 comprises the transmitting and receiving of all known symbols, i.e., symbols whose characteristics are defined by the choreographed standard handshake procedure. In the instant

claim, the transmitter transmits at least one known symbol on at least two non-adjacent carriers and transmits data symbols on carriers between said at least two non-adjacent carriers. The specification elaborates by reciting that "known equalization symbols are inserted into the data stream" and "the known symbols are referred to herein as equalization symbols, and the bins are referred to as equalization bins." See, e.g., page 32, lines 14-16. In the preferred embodiment, merely the equalization symbols interspersed in the data stream are needed for channel equalization, with the frequency response of the channel at frequencies corresponding to the remaining bins estimated by interpolating between the received equalization symbols in the equalization bins. See e.g., page 32, lines 18-20.

Applicant respectfully submits that the Chen recitation in column 28 is silent regarding a transmitter transmitting at least one known symbol on at least two non-adjacent carriers and transmitting data symbols on carriers between said at least two non-adjacent carriers. Instead, it refers to the use of an equalizer equal in time duration to K signal periods without mention of intercalating known symbols in a data stream.

Consequently, Chen fails to teach or suggest the indicated elements relied upon in the combination of Chen, Roberton and Zheng to allegedly render obvious instant claim 1.

Zheng relates to a method for jitter-free timing recovery in which a correlation-based timing indicator is used to adjust receiver timing. Applicant submits that while Zheng discloses the existence of equalizer taps, it fails to disclose the generation of filter taps for each carrier in response to at least one known symbol transmitted on at least two non-adjacent carriers, as stated by the Examiner. Instead, Zheng determines a timing indicator without any teaching or suggestion of the use of at least one known symbol on at least two non-adjacent carriers with data in-between Zheng subsequently performs a timing adjustment via the "transformed domain" by manipulating the transformed variables. To illustrate the orthogonal direction of the Zheng disclosure to the instant

disclosure, Zheng teaches against the subject matter of claim 3, which specifically recites that the equalizer generates the filter taps by interpolating points between the received said at least one known symbol. Zheng's converse teaching states that "The system according to the invention employs a nontraditional approach for timing recovery which bypasses calculation of the exact transmitter symbol rate and which avoids interpolation of time domain signal samples." Column 4, lines 20-23. Thus, Zheng also fails to provide the stated teaching against claim 1 utilized in the combination of Chen, Roberton and Zheng and instead teaches against aspects of the instant invention.

Further, in contrast to the instant invention Chen, Roberton and Zheng all fail to teach or suggest, nor does the Examiner so assert, a system for interconnecting a plurality of computing devices comprising a frequency domain equalizer that specifies the use of a single tap filter for each carrier of a plurality of modulated carriers received by a transceiver, as does the instant claim. See claim 1, lines 13-15. As such, and in consideration of the further deficiencies of the combination described above, the combination fails to render obvious instant claim 1.

Claims 2-7 depend from claim 1. For the foregoing reasons, the combination of Chen, Roberton and Zheng fails to teach all elements of the base claim. Consequently, Chen, Roberton and Zheng fail to render obvious claims that depend from claim 1.

Regarding independent claim 8, the Examiner asserts that the combination of Chen, Roberton and Zheng render obvious the claim for the same reasons advanced against claim 1. Consequently, Applicant defers to the forgoing arguments for claim 1, which conclude that the combination lacks at least the elements of: (1) a transmitter transmitting at least one known symbol on at least two non-adjacent carriers and transmitting data symbols on carriers between said at least two non-adjacent carriers; (2) a frequency domain equalizer that generates filter taps for each carrier in response to at least one known symbol transmitted on at least two non-adjacent carriers; and (3) a system for

interconnecting a plurality of computing devices comprising a frequency domain equalizer that specifies the use of a single tap filter for each carrier of a plurality of modulated carriers received by a transceiver. As such, Applicant respectfully submits that the combination of Chen, Roberton and Zheng also fails to render obvious instant claim 8.

Claims 9-14 depend from independent claim 8. For the foregoing reasons, the combination of Chen, Roberton and Zheng fails to teach all elements of the base claim and, consequently, fails to render obvious claims that depend therefrom.

Regarding independent claim 15, the Examiner again defers to the rejection of claim 1 and asserts that the subject matter is merely a method used to accomplish the tasks of claims 1 or 8 and 2. Consequently, the Examiner rejected claim 15 for the reasons outlined for claims 1, 8 and 2. Consequently, Applicant defers to the forgoing arguments for claims 1 and 8, which conclude that the combination lacks at several elements, and respectfully submits that the combination of Chen, Roberton and Zheng fails to render obvious independent claim 15

Claims 16-20 depend from claim 15. For the foregoing reasons, the combination of Chen, Roberton and Zheng fails to teach all elements of the base claim and consequently fails to render obvious claims that depend therefrom.

OTHER CONSIDERATIONS

Claim 1 has been amended to correct an error of form. Specifically, the word "transmits" on line 17 has been changed to the proper action verb "transmitting". No new matter has been introduced by virtue of this amendment.

CONCLUSION

Reconsideration of this application is respectfully requested and a favorable determination is earnestly solicited. Further, Applicant submits that the pending claims are in condition for allowance, and issuance of a Notice of Allowance is respectfully requested. The Patent Office is invited to contact the undersigned representative if it is believed that this would be helpful in expediting prosecution of this application.

Respectfully submitted,

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